



Dakota BioTech

line of Cell Culture Bioreactors

100L, 200L, 300L, 500L, 1000L



Modular Customizable Design to adapt to the Changing Process Requirements of CMOs

The Dakota Difference

Dakota Systems designs and builds Bioreactors with the end user and operators in mind.

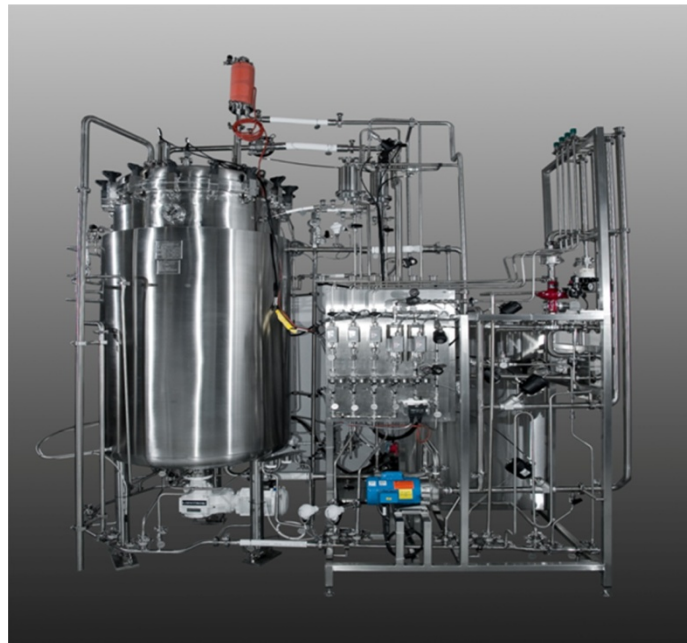
Our open frame piping skid is laid out to make operation and maintenance easy. All necessary components are easily accessible by the operator.

The Dakota Lightning/Flowserve agitators and double mechanical seals are robust and 2-3 years are typical for a maintenance cycle when using Kalrez orings. Dakota's heat blanket for the exhaust filter housing are reliable and much more cost effective than an exhaust condenser. Both of these are standard offerings.

Standard systems are available in 100L, 200L, 300L, 500L and 1000L but can be customized to meet customer requirements. Other requested sizes are optional and can be constructed up to 5000L.

Call us for you standard or custom requirements.

**Dakota 5000L Bioreactor with
5000L Clarification Vessel Using
a Common Control System**





Detail Photos



Sample Valve, DO & pH Probes



Lightnin A320 Impeller



Restorable Addition Ports



Gear box & Flowserve Double Mechanical seal



Overlay and Sparge Gas Panel



SIP/CIP Transfer Panel



Standard Features

Vessel

- ASME code rated 316L SS Vessel
- Vessel: 20 RA EP Internal, 35 RA External
- NA Connects or Triclamps on all Vessel Ports
- Bottom Drive Double Mechanical Seal
- Resterilizable Sample Valve
- Resterilizable Harvest Valve
- (3) Resterilizable ½" Addition Ports
- Drilled Tube Sparger
- 1 ½" or 2" AsepcO Drain Valve

Controls

- Allen Bradley CompactLogix Controller
- GaMP 5 Compliant Software
- 12" Color Touch Screen
- NEMA 4X Electrical Enclosure
- Wiring to NFPA 79
- Automatic Sterilization Software
- Automatic Pressure Control
- Automatic Agitation Control
- Automatic Temperature Control

Probes

- O₂ and pH Probes and Transmitters
- High Foam Level Probe
- Vessel Temperature RTD
- Condensate

Safety

- Head Plate Open Interlock
- SIP/CIP Interlock on Transfer panel
- Seal Steam Supply Low Pressure Switch
- Emergency Stop Circuit
- Vessel Rupture Disk
- Vessel Jacket Relief Valve

Skid

- Seal Steam Supply Regulator
- Heat Exchanger for 1°C Temp Rise/Min
- Air, O₂, CO₂, TMFC's for Sparge
- Air TMFC's for Overlay
- SIP/CIP Transfer Panel
- Exhaust Filter with Heat Blanket
- Sparge and Overlay Inlet Filters

Optional Features

Vessel

- Vessel: 15 RA EP Internal, 35 RA External
- Vessel: 20 RA Internal, No Finish External
- (4) Resterilizable ½" Addition Ports
- (1) Resterilizable 1" Addition Ports
- Load Cells & Transmitter

Controls

- 4 Gas Sparge Control
- Wonderware Scada Software and PC
- CIP Skid Interface

Probes

- Redundant DO and pH Probes
- HIGH HIGH Foam Probe

Safety

- (2) User-defined fixed speed pumps
- Variable Speed Pumps
- Scales for addition vessels
- Lock-out Valves for all Services (see note)
- Air Operated Addition Valves
- N₂ Sparge gas TMFC
- Factory Passivation
- Main Clean Steam Regulator
- Plant Steam Regulator
- Process Gas Regulators
- Instrument Air Regulator

Skid

- Weld Logs/Maps
- Videotape Record of Weld Inspection
- Material Certificates
- Instrument Data Sheets
- Catalog Cut Sheets
- User Requirement Specification (URS)
- Functional Requirement Specification (FRS)
- Software Design Specification (SDS)
- Software Testing Specification (STS)
- Factory Acceptance Test (FAT)
- Site Acceptance Test (SAT)

NOTE: If the Lock-out valve option is not purchased, the end user is responsible for assuring that all services can be locked or tagged out when maintenance is performed



Dakota BioTech Standard Models and Specifications

System Size	100 L	200 L	300 L	500 L	1000 L
System Dimensions	80"x38"x65"H	90"x42"x93"H	90"x42"x107"H	99"x51"x107"H	120"x60"x143"H
Working Volume	25-100 L	75- 200 L	90-300 L	150-500 L	200- 1000 L
Total Volume	160 L	275 L	450 L	675 L	1350 L
Aspect Ratio (TVol)	1.8	1.8	1.8	1.8	1.7
Aspect Ratio (WVol)	1.1	1.2	1	1.2	2.4
Sparge Air Flow	.2 - 10 SLPM	.4 - 20 SLPM	.6 - 30 SLPM	1 - 50 SLPM	2-100 SLPM
Sparge O ₂ Flow	.2 - 10 SLPM	.3 - 15 SLPM	.4 - 20 SLPM	.6 - 30 SLPM	1.5-75 SLPM
Sparge CO ₂ Flow	1 - 5 SLPM	.1 - 5 SLPM	.2 - 10 SLPM	.2 - 10 SLPM	.5-25 SLPM
Overlay Air Flow	2 - 10 SLPM	.4 - 20 SLPM	.6 - 30 SLPM	1 - 50 SLPM	2-100 SLPM

Optional Sparge Gas: N₂ with up to 4 gas control
Customer specified gas ranges optional

Agitator

Agitation Range	0-200 RPM	0-200 RPM	0-200 RPM	0-200 RPM	0-120 RPM
# of Impellers & Dia	(1) 8" A320	(1) 9" A320	(1) 10" A320	(1) 12" A320	(2) 18" A320
Motor/Shaft Size	1/2 HP x 1" Shaft	1/2 HP x 1" Shaft	1/2 HP x 1" Shaft	1/2 HP x 1" Shaft	3 HP x 2" Shaft
Drive	Bottom Drive: Motor, Gearbox and Flowserve ST/QBM/MRA double Mechanical seal Optional magnetic drive and different impeller types available				

Ports

Top Plate	(2) 2" triclamps-spray ball, (2) 1 1/2" Triclamps-spare, (1) 1 1/2" Triclamp-Light (1) 1 1/2" Triclamp-sight glass, (1) 1 1/2" Triclamp-pressure gauge (1) 1 1/2" Triclamp-pressure transmitter, (1) 1 1/2" triclamp-rupture disk (1) 1 1/2" triclamp-high foam probe, (1) 1 1/2" triclamp-Exhaust filter,
Upper Side Wall	(4) 1 1/2" NA Connect-Contained Addition, (1) 1/2" Triclamp-Overlay (1) 1 1/2" NA Connect-Spare, (1) 4" Triclamp-Sight Glass
Lower Side Wall	(1) 1 1/2" NA Connect-Temperature, (1) 1 1/2" NA Connect-DO Sensor (1) 1 1/2" NA Connect-DO Sensor Redundant, (1) 1 1/2" NA Connect-pH Sensor (1) 1 1/2" NA Connect-pH Sensor Redundant, (1) 1 1/2" NA Connect-Air Sparge (1) 2" NA perfusion port, 1/2" Asepco sample valve (1) 1 1/2" NA Connect-Spare
Jacket	(2) 1" Triclamps for coolant in/out, (2) 1 1/2" triclamps 1000L
Bottom	1 1/2" or 2" Asepco drain valve, 4" triclamp for seal or special flange on 1000L

Specifications subject to change. Contact Dakota for standard and customized requirements

